

INTER-SOCIETY COLOR COUNCIL

NEWS LETTER

NUMBER 189

July-August 1967

NEW MEMBERS

The following applications for individual membership were accepted at the last meeting of the Board of Directors held in New York City on June 11, 1967.

Individual Members

Particular Interests

Mr. William M. Benson
The Bunker-Ramo Corporation
P. O. Box 526
Randolph AFB, Texas 78148

Contrast phenomena as they relate to hue, saturation, and lightness.

Mr. Robert L. Booker
Electrical Systems Div.
Code 621
Naval Ship Res. & Dev. Center
Annapolis, Md. 21402

Evaluation of colored luminous sources and color determining components.
Development of radiometric instrumentation.

Mr. John C. Farmer
West Point Pepperell Inc.
Color Measurement Lab.
Opelika, Alabama 36801

Standardization of results of tristimulus measurements, investigation of the change in size of the McAdam ellipses with changes in luminosity, digital formulation of color considering cost, and fastness to light, crocking etc. standard for a "good" optically brightened white.

Mr. C. Charles Garnier
17 Canada Road
Gabalpa
Cardiff, S. Wales

Research and teaching with free lance design and color consulting work.

Mr. C. Harris
Instrument Development Laboratories
67 Mechanic Street
Attleboro, Mass. 02703

Instrumentation.

Miss Joyce Johnson
Interchemical Corporation
Color & Chemicals Div.
150 Wagaraw Road
Hawthorne, New Jersey 07506

Color order systems, the development of specialized color sales aids, color mixing and measurement, color matching.

Individual Members (Cont.)

Mr. Lester C. Lewis
1661 Crescent Place, N. W.
Washington, D. C. 20009

Mr. Gordon Mackinney
University of California
College of Agriculture
Dept. of Nutritional Sciences
Berkeley, California 94720

Mr. William R. Morris
Rohm & Haas Company
5000 Richmond Street
Philadelphia, Pa. 19137

Mr. Walter Moses
Color Compliment
Div. Penniman Chemicals, Inc.
364 Manville Road
Pleasantville, N. Y. 10570

Mr. Jesus Grijelmo Ribechini
Prisma, S. A.
Apartado de Correos 548
Bilbao, Spain

Mr. Roger L. Rounds
109 Mannix Road
E. Greenbush, N. Y. 12061

Mr. Lennart Ryden
Standards Dept.
Telefon AB L M Ericsson
Fack
Stockholm 32, Sweden

Mr. David H. Selman
Neotec Corporation
640 Lofstrand Lane
Rockville, Md. 20850

Mrs. Jean A. Siegfried
1612 El Camino Real
Menlo Park, California 94025

Mr. Gerald L. Truax
Instrument Development Laboratories
67 Mechanic Street
Attleboro, Mass. 02703

Particular Interests (Cont.)

Color of pulp and paper. Color photography, esp. in stereo. History of spectrophotometry. Trichromatic palettes and their use.

Measurement of color of foods.

Testing and manufacturing of colored lacquered and water based dispersions.

- (1) To become more familiar with the techniques and methods of teaching the use and understanding of color to others.
- (2) To gain a further understanding of color technology and its uses in industry.

Application of color to the paint, packaging and printing industries.

Color measurement by instrumental means. Instrumental color matching. Dye and pigment identification.

Notation, tolerances, reproducibility and checking methods.

Manufacturer of color instrumentation.

Knowing more about it in all fields especially in relationship to light.

All phases of measurement and interpretation of measured data.

Individual Members (Cont.)

Mr. Jack B. Wertz
Lanman Engraving Company
1509 Leslie Avenue
Alexandria, Va. 22301

Mr. Ray K. Winey
14551 LaSalle Avenue
Michawaka, Indiana 46544

Particular Interests (Cont.)

Graphic arts.

All aspects of surface colors (pigments rather than dyes mainly).

**APOLOGY TO NEW MEMBERS
OF MARCH 4, 1967**

of the N.L. Your editor hopes that this error will be excused and provides the missing information below. Since the members' affiliations and addresses have already been published, only the names are repeated.

Through an oversight, there was no mention of the particular interests of the new individual members reported in the March-April 1967 issue

MembersParticular Interests

Mr. V. M. Abdulla

Numerical expression of small colour differences in terms of objective measurements. Interpretation of subjective judgment of colour differences in terms of psycho-physical measurements.

Miss Patricia Bresden

As applied to printed material and graphic expression, as applied to products for the consumer markets, as applied to domestic, commercial and institutional interiors and furnishings.

Mrs. Maria DaRocha

Color instrumentation and specification.

Mr. Robert W. Dobles

Teaching photographic science.

Mr. Paul Fink-Jensen

Optical behavior of coatings in dependence of composition and structure, color measurement.

Prof. Robert J. Fletcher

Colour systems, colour vision - applied and theoretical.

Mr. Charles E. Garland

All aspects of color analysis of dyes in solution or on the fiber.

Mr. Harvey F. George

Graphic arts color reproduction.

Miss Margaret Halstead

Colorimetry, spectrophotometry and colour rendition.

Members (Cont.)

Mr. Anders Hard

Miss Suzanne Jones

Mr. Andreas Kornerup

Mr. Rolf Kuehni

Mrs. Myrtle Loehr

Mr. Roberto D. Lozano

Mr. Charles C. Lumpkin

Mr. James A. Meacham

Dr. Robert E. Phillips

Mr. Charles K. Pollack

Mr. Allyn S. Rashkin

Miss Lorna Staples

Mr. Alfred J. Stern

Particular Interests (Cont.)

Theories about colour perceptions and its correlation with physical attributes and the practical application of these theories in industry, commerce, environment planning, education etc. Research and development work on a new colour atlas based on the Natural Colour System as it is known from Ewald Hering.

Styling of white paper, marketing, display.

Pigment mixture, color measurement, color systems, color harmony, psychological color coordinates, color history.

Spectrophotometry, colorimetry, computer dyestuff formulation.

Teaching. Developing an interior design curriculum on this campus. Application to interior design.

Color vision, colorimetry, and color differences.

Development of computerized method to match colors from instrumental readings.

-- (Former IES delegate)

Instrumental -- manufacture of color and fluorescence measuring instruments. Collection and dissemination of information on fluorescence measurements, and to a lesser extent spectral color measurement.

Iron oxides pigments for paint, plastic, paper and rubber. Instrumental color control and color matching.

Control of color in building products. Theoretical explanations of empirical solutions to color problems.

Research and quality control.

Color matching problems between natural teeth, gum tissue, skin and artificial prostheses.

Members (Cont.)

Mr. Rene Willis

Particular Interests (Cont.)

Teaching liaison between the automotive finish, industrial finishes, trade sales, automotive refinish manufacturers and Holland Suco Color Company in regard to color.

SYLVESTER K. GUTH
TO RECEIVE
IES GOLD MEDAL AWARD

Sylvester K. Guth, individual member of the ISCC and manager of the Radiant Energy Effects Laboratory in General Electric's Lighting Research Laboratory at Nela Park, has been selected to receive the Illuminating Engineering Society's 1967 Gold Medal Award, it was announced by A. D. Hinckley, Managing Director of the 11,000 member Society.

One of the highest honors in the lighting profession, this award is made by the IES "for the purpose of giving recognition to meritorious achievement which has conspicuously furthered the profession, art or knowledge of illuminating engineering." Dr. Guth, a Fellow of the Society, is the twenty-second engineer so honored since the medal was instituted. Formal presentation of the medal and accompanying citation will be made at the IES National Technical Conference in Montreal on September 14.

The 1967 award to Dr. Guth is in recognition of outstanding contributions in the fields of light, vision, and seeing. During his 37-year lighting research career he has developed many criteria and techniques used in evaluating visibility, contrast sensitivity, visual acuity, glare, and ease of seeing. He also devised demonstration materials and equipments to illustrate the effects of illumination upon these factors. His work on discomfort glare has been recognized here and abroad, and is the basis for the new evaluation method approved by the IES.

Dr. Guth is a lecturer and speaker at lighting conferences, technical meetings and special courses conducted at universities and colleges. He is the author of more than 50 scientific and technical papers on light, vision and seeing. In 1951 at Stockholm, Sweden, in 1955 at Zurich, Switzerland, in 1959 at Brussels, Belgium, and in 1963 at Vienna, Austria, he was an American delegate and presented papers at meetings of the Commission Internationale de L'Eclairage (CIE). He is currently chairman of the International Committee on Discomfort Glare, a member of the CIE's Action Committee, and active in its United States National Committee. In 1954 he presented a series of lectures on light and lighting in Iceland, and assisted in the founding of the Icelandic Light Technical Society.

Dr. Guth is a native of Milwaukee, Wisconsin. He received his Bachelor of Science Degree in Electrical Engineering in 1930, and a Professional degree of Electrical Engineer in 1950, both from the University of Wisconsin. He is a registered Professional Engineer, State of Ohio. The Northern Illinois College of Optometry awarded him the honorary degree of Doctor of Ocular Science "in recognition of his outstanding contributions to the profession of Optometry."

In addition to the IES, Dr. Guth is a Fellow of the American Academy of Optometry and the American Association for the Advancement of Science. He is

a member of the Optical Society of America, the Association for Research in Ophthalmology, Inter-Society Color Council, the Illuminating Engineering Society (London), and the Armed Forces National Research Council Committee on Vision.

In his capacity with General Electric Dr. Guth directs research on the physiological, psychological and psychophysical effects of radiant energy on man, animals and plants.

ADDITIONAL
ANNUAL REPORTS

As a result of the change in procedure at the annual meeting this year, some reports were not available by the deadline date for the May-June (Annual Meeting) issue of the N.L. The following reports were received subsequently.

Problems Committee Report

Subcommittee on Problem 16: Standard Methods for Mounting Textile Samples for Colorimetric Measurement. W. L. Matthews, Chairman.

This subcommittee has now prepared an interim report which is being circulated for approval. It is hoped that publication will be possible in the near future.

Subcommittee on Problem 30: Color in the Building Industry. Milo D. Folley, Chairman.

We enjoyed an active session on June 12 during the annual meeting, with discussion centering on the acceptance of a filing system as prepared by Alex Styne and approved by Ken Kelly and Everett Call. The following motion was unanimously accepted -- "that subcommittee for problem 30 recommends the application of the filing system developed by Alex Styne for the description of colors and the filing of colored samples. This filing system is based on the method of designating colors developed by the ISCC in subcommittees for problems 2 and 23, and contained in the Universal Color Language. This subcommittee recommended at the previous meeting that this basic approach of designating color be adopted by the building industry."

Further discussion of the use of the Color Language showed that the Aluminum Association, represented by W. W. Pritsky, had selected the Color Language to designate their standard colors. Members felt the random pattern might be improved by actually placing the color samples in their proper index order and several volunteers under Nick Hale offered to rearrange the card in proper order just to show the Association how their card could relate to the index.

The subcommittee is attempting to entice industry to use the Color Language and it was felt that they should secure the cooperation of AIA members to use the language in their specifications. All felt that if this could be done, industry would soon fall in line. Carleton Spencer showed how the automotive industry was exposed to the Munsell system because of the specification of contrast levels under government safety regulations.

It was felt that the ISCC should take action on a color film for the Color Language so it could be available for educational purposes. This might be done in connection with the AIA or other interested groups.

Duplication of effort in connection with CMG activities was discussed and members felt that if close liaison were kept with members who are in both groups, it would allow for transfer of information and avoid duplication.

Alex Styne advised that two papers which he has prepared, "Colors Can Be Filed" and "Testing The Rainbow," are in the hands of AIA Journal editor, Koehler, for consideration.

Report of the American Institute of Architects Delegates.
Waldron Faulkner, Chairman.

The delegates from The American Institute of Architects to the Inter-Society Color Council were as follows: William H. Scheick, Executive Director, Milo D. Folley, Eric Pawley, Karel Yasko, Theodore W. Dominick, and Waldron Faulkner, Chairman.

For the first time in some years the Institute showed a serious interest in the subject of color. This took the form of the appointment of a "task force" on Color Advisory Systems to make a study and report to the Committee on Building Materials and Systems. The specific problem had to do with color selection and color specification as related to paints.

The task force consisted of the following members:

Russell L. Stecker
C. Herbert Cowell
S. Scott Ferebee, Jr.
Waldron Faulkner
Milo Folley
Elmer Lundberg, Chairman
Robert J. Cowling, A.I.A. Staff

The task force met several times in the course of the year and made its report to the Committee on Systems and Materials.

Report from the American Association of Textile Chemists and Colorists Delegates.
Roland E. Derby, Jr., Chairman.

In the marketplace one of the most important properties of most textile materials is its color. Because of this fact, color problems occupy an important position amongst the various AATCC research committees.

These research committees are responsible for developing test methods which indicate the suitability of dye-fiber systems for specific end uses. In the course of these studies, they are exposed to a broad gamut of both practical and theoretical color problems.

In order to provide liaison with other color groups, and to aid the committees in their work, a color committee exists. This committee, designated as RA-36 Color Technology, is composed of specialists in color science. The present Chairman is Robert F. Hoban of Sandoz, Inc.

At present, this committee is working closely with the Lightfastness Committee in completing work on the standardization of the degree of fade of the L-4 Blue Standard. This work is advancing satisfactorily and it is hoped that the final data will be available in 1967.

Work on another grey scale for evaluation of color transference, similar to that currently available for color loss, is being pursued in cooperation with the Munsell Color Company.

Several members of the Color Technology Committee are working on the ISCC Sub-Committees concerned with problems 16, 24, 25 and 27.

Appended to this report is a listing of articles on color which appeared in the following magazines during the past year:

The American Dyestuff Reporter
The Journal of the Society of Dyers and Colourists

BIBLIOGRAPHY - 1966

- Mischutin, V., "APPLICATION OF COLOR MEASUREMENT AND CONTROL IN THE FIBER INDUSTRY," Am. Dyestuff Repr., 55, P-255, (1966).
- Ward, John W., "AN AUTOMATIC DIGITAL COLORIMETER FOR LABORATORY AND PROCESS APPLICATIONS," Am. Dyestuff Repr., 55, P-1006, (1966).
- Stump, W., "THE COLOR AROUND US," Am. Dyestuff Repr., 55, P-243, (1966).
- Markarian, H., Enos, H. F., and Pratt, J. J., Jr., "COLORIMETRIC AND GAS CHROMATOGRAPHIC MEASUREMENTS OF DIELDRIN RESIDUES IN WOOL - A COMPARISON OF ANALYTICAL METHODS," Am. Dyestuff Repr., 55, P-439, (1966).
- Stearns, E. I., "RECENT ADVANCES IN COMPUTER COLOR MATCHING," Am. Dyestuff Repr., 55, P-455, (1966).
- Rhode Island Section AATCC, "INSTRUMENTAL EVALUATION OF THE COLOR OF FLUORESCENT TEXTILES IN TERMS OF AVERAGE OBSERVER RESPONSE," Am. Dyestuff Repr., 55, P-997, (1966).
- Graham, Jr., A. D., "COLOR ORDER SYSTEMS," Am. Dyestuff Repr., 55, P-231, (1966).
- Stanziola, R., "COLOR INSTRUMENTATION FOR THE PRACTICAL DYER," Am. Dyestuff Repr., 55, P-247, (1966).
- Farrar, J. E., and K. Lees, "A COLORIMETRIC METHOD FOR THE ESTIMATION OF DIELDRIN IN WOOL," J.S.D.C., 82, P-379, (1966).
- McLaren, K., "DEFECTIVE COLOUR VISION I - ITS NATURE," J.S.D.C., 82, P-345, (1966).
- McLaren, K., "DEFECTIVE COLOUR VISION II - ITS DIAGNOSIS," J.S.D.C., 82, P-382, (1966).
- Giles, C. H., "THE TERCENTENARY OF COLOUR CHEMISTRY," J.S.D.C., 82, P-63, (1966).

Report of the Federation of Societies for Paint Technology Delegates.
S. L. Davidson, Chairman.

The Federation has been active during 1966 in this field as indicated by the twelve papers that were published in The Journal of Paint Technology during 1966. Two of the papers are the result of two local societies reporting work done by their technical committees.

Other work done to increase the knowledge of the members of the Federation were the presentation of a series of lectures on color sponsored by the Chicago Society and a course on color technology sponsored by the New York Society.

Reprints of the Panel Discussion "Color as an Analytical Tool" jointly sponsored by the ISCC and the FSPT have been made available for distribution to the ISCC membership.

The delegation is considering the possibility of presenting a program on Color Order Systems at the 1968 Annual Meeting of the Federation.

A bibliography of articles published in The Journal of Paint Technology is attached.

BIBLIOGRAPHY

From

THE JOURNAL OF PAINT TECHNOLOGY 1966

- Afremow, L. C. and Vanderberg, J. T. "High Resolution Spectra of Inorganic Pigments and Extenders In the Mid Infra Red Region From 1500 CM-1 to 200 CM-1" Vol. 38, No. 495, pp. 169-202, April, 1966.
- Armstrong, W. G. and Ross, W. D. "Anomalous Reflections From Films Pigmented With Titanium Dioxide" Vol. 38, No. 499, pp. 462-468, August, 1966.
- Billmeyer, F. W. "Precision, Accuracy and Validity of Instrumental Color Measurement" Vol. 38, No. 503, pp. 726-731, December, 1966.
- Golden Gate Society. "Color Instruments Take The Color Aptitude Test" Vol. 38, No. 500, pp. 564-574, September, 1966.
- Honigman, B. "Crystal Properties of Organic Pigments" Vol. 38, No. 493, pp. 77-84, February, 1966.
- Kudva, A. K. and Williams, G. C. "The Reflectances of Free and Bonded White Paint Films" Vol. 38, No. 494, pp. 156-162, March, 1966.
- Leete, C. G. "Colorant Mixture Prediction: A Digital Computer Method for Colorimetric Matches" Vol. 38, No. 494, pp. 136-140, March, 1966.
- Loof, H. "Goniophotometry With The Zeiss GP-2" Vol. 38, No. 501, pp. 632-639, October, 1966.
- Miller, R. "Refinements in Determination of Hiding Power" Vol. 38, No. 494, pp. 131-135, March, 1966.

Mitton, P. B. and Madi, A. J. "Evaluating TiO_2 - Colorant Interaction by Measurement of Scattering Coefficient" Vol. 38, No. 503, pp. 717-725, December, 1966.

Philadelphia Society. "Color Difference Acceptability Versus Conditions of Viewing" Vol. 38, No. 502, pp. 695-701, November, 1966.

Wengert, E. M. "Effect of Atmospheric Gases on Color Changes in Wood Exposed to Ultra Violet Light" Vol. 38, No. 493, pp. 71-76, February, 1966.

Report of the Society of Photographic Scientists and Engineers Delegates.
Albert J. Derr, Chairman.

We are pleased to submit our report on behalf of the Society of Photographic Scientists and Engineers.

As usual, we have enclosed a list of articles of interest which were published in the Society's journal, Photographic Science and Engineering.

The Society has scheduled a Symposium on Color in Photography to be a special session at its 1968 Annual Conference to be held in Boston next June. Further information will be forwarded to the council as soon as the program is arranged.

BIBLIOGRAPHY
ARTICLES OF COLOR INTEREST
Vol. 10, 1966

R. G. Gendron & M. C. Goddard. Characteristic Vectors for Modulation Transfer Function of Color Films, p. 114.

C. J. Bartleson. Color Appearance Measurement I. A Colorimeter for Haploscopic Color Matching, p. 104.

E. J. Breneman. Color Appearance Measurement II. A Haploscopic Brightness Meter, p. 144.

C. S. McCamy. Concepts, Terminology and Notation for Optical Modulation.

REVIEWS OF PRINCIPLES
OF COLOR TECHNOLOGY

The publication of Principles of Color Technology, by Fred W. Billmeyer, Jr., and Max Saltzman (Wiley-Interscience, Inc., New York, N.Y.), was reported in an earlier issue of the N.L. without critical comment. In order to provide more useful information for N.L. readers, your editor has obtained the following three reviews, each one from a different viewpoint with respect to specialty of color interest by the reviewer. While only three such viewpoints do not encompass the totality of ISCC interests, they should provide a compass of informed opinion not ordinarily available in a single review. Readers' comments concerning the desirability of this multiple review procedure will be welcome. Furthermore, if the continuation of the practice should prove to be desirable, your editor will be delighted to hear from anyone who is kind enough to volunteer his services as a reviewer for the price of the customary complimentary copy. In particular, reviewers are needed for the new books on color reported later in this issue. Ed.

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Review by Martha E. Jungerman, Color Coordinator, W. T. Grant Co.

Principles of Color Technology presents the fundamentals of color as a science and the technology of color in a very complete and understandable manner. The format and graphs and charts provide excellent guidance for those interested in the physical measurement and comparisons of color.

For the designer or stylist who is primarily interested in the psychological and esthetic effects and appeal of color it is much too complex. Most stylists and designers have no more direct contact with the choice of colorants or methods of application than to approve the appearance of the strike-off or the sample.

The vocabulary is strange to a stylist, who could understand Uniform Chromaticity or the CIE system, if forced, but who chooses words which express emotions or relate to experiences to describe color, e.g., names of jewels or flowers. As for color measurement and profile of colorant mixtures, they really do not need to know about them. Nor do they expect expert advice from the technologist, whether a dyer, a printer, or a producer of other colored materials, as to the appeal and beauty of a combination.

The Annotated Bibliography is one of the reasons, however, that anyone seriously concerned with color in any way should have this book readily available.

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Review by David H. Krantz, Assistant Professor, Department of Psychology, University of Michigan.

An introduction to color technology must integrate the principles of physics, chemistry, physiology, and psychology. In Principles of Color Technology, Billmeyer and Saltzman meet this problem admirably, by hammering away in every chapter at the necessity of considering three factors in the production of color: the light source, the object, and the eye. "Hammering" is an inadequate metaphor; for the book employs an extraordinary range of visual aids to dramatize its message. A reader is bound to emerge appreciating the facts that color involves perception as well as chemistry and that visual assessment of color is basic to color measurement.

The exposition of perceptual principles also benefits from the early introduction (Chap. 1) of coordinates for perceived color, using Judd's "desert island" experiment as a point of departure, and from an excellent chapter (Chap. 2) covering the Munsell and CIE specification systems, and uniform chromaticity diagrams.

The treatment of perceived color would be much more comprehensive, however, if the authors had hammered away at four factors instead of three: source, object, context, and eye. The only reference to context effects is a mention of adaptation, tacked on to a discussion of color nonconstancy with changes of illuminant. But we know that adaptation and contrast affect perceived color, as well as discriminability of colors, and these principles

may have important applications. For example, buyers and sellers of colored products are advised to agree in advance on the methods of color measurement, including illumination, instrumentation (if any), methods of calculation, and permissible tolerances. One might add, in the case of visual assessment of color, the advice to agree on conditions of adaptation, and on simultaneous viewing context, as well.

Apart from the inherent limitation of the treatment of perceived color, due to the omission of context, there are several instances in which unwary readers may be confused by statements in this book. For one thing, there is occasional use of language that implies oversimplified relations between physical and perceptual variables. For example,

"...white light is made up of all the visible wavelengths." (page 4)

"...one can readily develop the ability to recognize colors in a general way from their spectral reflectance or transmittance curves." (p. 12)

Other instances of confusing statements relate to the treatment of metameric matches. The discussion of color temperature and correlated color temperature may be hard to fathom, since it precedes the material on color matching. The same holds for the statements on object metamerism in Chap. 1. Moreover, the authors do not make it sufficiently clear that tristimulus values of an object are only specified relative to a given illuminant and observer. Their statement to this effect (pp. 32-35) is made in the context of discussing calculation of tristimulus values, and may not help the unwary reader further on. On pp. 39-41, we see references to luminous reflectance or luminous transmittance, with no qualifications regarding illuminant. Furthermore, in the entire discussion of photoelectric colorimetry (pp. 64-65 and 66-74), there is no explicit warning that the measured tristimulus values are only valid when the object is viewed under a particular illuminant. Omission of such warnings is hardly in keeping with the emphasis on source, object, and eye around which the book is organized.

Finally, the stated policy (p. 2) of giving "best current opinion" rather than conflicting points of view sometimes leads to dogmatic statements, where readers could profit from a more balanced discussion. For example,

"...the eye is an excellent null detector... but it is considerably less trustworthy in estimating how big a given difference is." (p. 59) (underlined words in italics in original text.)

Such a statement may suppress inquiry, where readers should rather be exposed to some of the direct estimation methods of modern psychophysics.

Despite these possible sources of confusion, and the failure to consider context as a factor, this book provides workers in color technology with a useful and accurate introduction to perceived color, in an unusual and highly effective format.

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From the opening chapter "What is Color?" through "Color Technology--Present and Future" the authors have presented an interesting and easily readable introduction to color and its measurement.

The authors state "...The persistence of these questions indicated the need for a truly elementary book serving color and the use of color in industry." This book weaves a basic groundwork for the beginner in color and color measurement. No newcomer in this field should be found without this book in his library. This book is not a cookbook of recipes but is a nudge to think and explore. Principles of Color Technology provides excellent definitions of fundamental terms used in the field of color. Some authors, by their terminology have tended to lose and confuse the uninitiated. The textile dyeing and finishing industry is attempting to train technologists by selecting from the labor pool those persons showing marked aptitudes for the sciences. Under these circumstances there is a distinct language barrier for the high school graduate. The trainee fails because the transition experience is beyond his grasp, thus destroying or impeding his confidence in the new experience. Basic terms simply explained and profusely illustrated as in this book, will be comprehended and can engender enthusiasm which is a necessary ingredient for success.

Once the trainee is familiar with the concept of the basic terms he is then ready for the expansion of his subject. The selection of the necessary material has been provided for in the annotated bibliography found in Chapter 7.

The first chapter gives consideration to the physical stimulus. The discussion concerning light sources establishes the energy concept and relationships between sources. The transmission, absorption and scattering effects of light are explained; polarization and its effects are glaringly absent.

"Description of Color" sets the stage quite easily for subsequent consideration and amplification in "Color Order Systems." The differentiation between the terms hue, value and chroma is discussed. The discussion of perception, color vision and chromatic adaptation is begun in this chapter and amplified in later chapters in relation to other terms.

Chapter 2 "Color Order Systems" is a much needed topic for the textile industry. One of the needs of the textile color technologist is the basis for the relationship between the different useable systems. Many workers are confused by the numbers of systems and are hesitant to select one; and, once a system is chosen they believe they cannot change. The reluctance to change stems from the belief that much useable data will be sacrificed in the transition.

The refrain stated many times throughout the book, "light source, object and observer" is related to the examination and assessment during the process of color measurement, specification and tolerances. The statement "a color is never matched until the customer accepts it" is an apt summation. Assessments using limiting standards and color difference measurements using various equations are adequately discussed. A survey of basic instruments proceeding through fully instrumental color measuring systems is presented. The need for calibration is also described.

Chapter 7 "Annotated Bibliography" presents an excellent selection of pertinent publications in color.

NEW WILEY BOOKS
ON COLOR

Color Science, by Gunter Wyszecki, Head, Radiation Optics Section, National Research Council of Canada, and W. S. Stiles, Latterly, Deputy Chief Scientific Officer, The National Physical Laboratory, Teddington, England. 628 pages. \$27.50.

According to the publisher, this volume contains the essential details of light sources, optical filters, and detectors required in experimentation--succinct accounts of the working concepts in color-matching, color discrimination, and color adaptation--logical presentations of the formulas arising in the development of these concepts--and the expression, mainly in the form of tables, of the quantitative properties of human color vision generally accepted as the standard data applicable in calculations.

Principles of Color Reproduction: Applied to Photomechanical Reproduction, Color Photography, and the Ink, Paper, and Other Related Industries, by J. A. C. Yule, Kodak Research Laboratories. 411 pages + 8 tip-ins. \$15.00.

REVIEW OF LIGHT
AND VISION

(Ed. note: The following review first appeared in the June 1967 issue of Applied Optics, a publication of the Optical Society of America, and is reproduced here by permission of author and publisher.)

Conrad G. Mueller, Mae Rudolph, and the Editors of Life, LIGHT AND VISION. Time, Inc., New York, 1966. 200 pp. \$3.95. Reviewed by C. J. Bartleson.

This is a perplexing book. It is perplexing because the essence of an excellent book is buried within the 200 pages between its covers, yet the net result is not an excellent book. This technically competent, lucid core of informative exposition is dissected, overlaid, and largely obscured by a potpourri of trivia and a confluence of "cute" analogies and illustrations.

It consists of 8 chapters, interwoven with "picture essays," together with two appendices, bibliography, index, and picture credits. As the title implies, these chapters deal with light (physics) and with vision (anatomy and physiology, perception, and psychophysics). However, in what is probably an attempt to relate this information to common experience in meaningful ways, considerably more ground is covered. The continuity of the essay is interrupted by the intrusion of chapter-length sections devoted to the history of photography and to a discussion of painting (neither of which is very well done, although the text of the section on painting technique at least attempts to apply some of the information on perception and light developed in the book, while the section on photography rambles off into a disjointed review of the early growth of photographic methods that appears more to be the work of an aesthetician than a technician). This kind of obfuscation of the theme, combined with the ubiquitous fatuity of the "picture essays," results in an unfortunate miscellaneous collection of useful and irrelevant information coupled with helpful and inappropriate illustrations.

Chapter 1 ("Vision: Man's Link With The World") is an interesting general introduction to the subject of visual perception. Chapter 2, entitled "The Science of Light," is handled in a straightforward and conventionally

informative manner. Similarly, chapters 4 and 5 ("From Light to Sight" and "Exploring the Spectrum") are informative without pedantry or undue condescension. Chapter 6 ("Sensing Light's Many Shades") is probably the best in the book (as is also its accompanying "picture essay") for a lucid transfer of information, although it suffers somewhat from an attempt to utilize the word "color" with a multiplicity of implicit definitions. In fact, "The Paradox of Color" in the pictorial section associated with the preceding chapter would largely be untangled if the term "color" were pinned down with a single definition formulated from considerations of perception. The two remaining chapters ("Three Dimensions of Vision" and "Seeing With The Brain") are also good basic discussions of some of the aspects of visual perception.

In fact, the main textual chapters themselves, in spite of the impressions that could be derived from headings that might better have been left to grace the pages of Time magazine, do provide a very good, although understandably incomplete, introduction to the subject of visual perception. It would seem that Dr. Mueller, who in his publications has amply demonstrated both his expertise in the area of visual perception and ability to communicate this knowledge with clarity, is most likely mainly responsible for these portions of the book. On the other hand, the so-called "picture essays" probably derive largely from the efforts of the editors of Life. These essays are the principal contaminants of the work. The editors state that "Each chapter has a supplementary picture essay that may be read independently." Taking this as a cue I would suggest that someone interested in a good basic introduction to visual perception read only the main chapters (comprising 74 pages) and skip the 110 pages of "picture-essays." Those who enjoy "reading" Life magazine, however, might prefer ignoring the chapters and looking at the remainder. There is, at least, a choice. Perhaps that is, after all, a form of complement for the editorial style of the book.

**AAPL HONORS FRANK REILLY
AND AL CAPP**

As reported in the March-April '67 issue of the N.L., the American Artists Professional League presented a Distinguished Service

Award to Ralph M. Evans. Your editor did not know at that time that the AAPL similarly honored two other distinguished individuals whose names will be of interest to N.L. readers.

One award went to the late Frank J. Reilly "for highest attainment in teaching sound disciplines in craftsmanship, high standards of integrity and beauty."

Al Capp received an award "for distinguished service to fine art in America in his unstinting assault on the cult of ugliness and emptiness in the arts." While Mr. Capp was not able to attend the Annual Dinner, at which the presentations were made, he provided a notable comment on abstract art. As reported in the May 1967 AAPL News Bulletin, Mr. Capp defines abstract art as "the product of the untalented, sold by the unprincipled to the totally bewildered."

**COSMETIC CHEMISTS TO
HOLD SEMINAR ON COLOR**

The Society of Cosmetic Chemists will conduct a seminar on "Color in Cosmetics" at the Hotel Ambassador in Chicago on Sept. 21 and 22, 1967.

The subject will be covered in four half-day sessions entitled: Physical and

Chemical Aspects of Color; Hair Color--Formulation and Evaluation; Colored Products--General--Formulation and Evaluation; and Medical, Legal, and Safety Aspects of Color.

Sam J. Huey, a delegate to the ISCC from both the American Society for Testing and Materials and the Federation of Societies for Paint Technology, will present the initial paper, entitled "What is Color?" Gerald L. Truax, a new ISCC individual member, will follow with "Color Measurement in the Cosmetic Industry," and Sam Zuckerman, delegate from the Dry Color Manufacturers' Association, will present a luncheon address dealing with the background of current color-additive regulations.

Morris J. Root is the Seminar Chairman. The SCC office is at 2 East 63rd Street, New York City.

**WORKSHOP ON COLOR CONTROL
AT FSPT MEETING**

The 45th Annual Meeting of the Federation of Societies for Paint Technology to be held in Minneapolis on Oct. 15-18, 1967, will include two workshop sessions on "Color Control for the Small Plant." These workshops will be moderated by S. Leonard Davidson, chairman of the FSPT delegation to the ISCC.

Attendance at the workshops will be limited to 30 people, and only those pre-registered for each session will be admitted.

**EXHIBITION BY
FABER BIRREN**

A group of color studies by Faber Birren and by young painters trained under him was on exhibition at the East Hampton Gallery in New York City from June 12 to July 1, 1967. All the studies were based on special palettes developed by Mr. Birren; these palettes were included with the studies.

The exhibition was described in a colorful folder which included four very attractive examples of the studies.

**AID GIVES BENEFIT FOR
COOPER UNION MUSEUM**

In late May, the New York Chapter of the American Institute of Interior Designers held a benefit at the Cooper Union Museum to start an Acquisition Fund for the Museum. Henry F. duPont, chairman of the executive committee of the Committee to Save Cooper Union Museum, reported that about 500 people attended the party and the exhibition of styles of decoration.

Mr. duPont has also indicated that further progress has been made in the matter of transferring authority for the Museum from the Cooper Union Trustees to the Smithsonian Institution, and that his committee is on the verge of reaching an understanding for the use of an outstanding building for the Museum's new home.

**TREASURES FROM THE
COOPER UNION MUSEUM
ON EXHIBITION IN D.C.**

The National Collection of Fine Arts, Smithsonian Institution, has on exhibition at the Art Hall, Museum of Natural History Building, 250 "Treasures from the Cooper Union Museum." The exhibition began on July 13 and will be continued through Sept. 24, 1967. Included are

textiles, embroidery, costume accessories, furniture, wallpaper, woodwork, glass, ceramics, metalwork, sword fittings, paintings, drawings, prints, books, and miscellaneous objects.

**SEVEN NEW FD&C PLATING
COLORS BY ALLIED CHEMICAL**

Allied Chemical Corporation has introduced seven new plating dyes for coloring dry food mixes, pressed candies and tablets.

The certified Food, Drug and Cosmetic (FD&C) dyes are manufactured in powder form by a special technique that allows the colorants to achieve extra-rich, natural shades in dry mixes for gelatin, pudding, baked goods, frostings, soft drinks and other "instant" food preparations. Allied's new plating colors are also recommended for improving the color stability of pressed candies and pharmaceutical tablets.

National(R) plating colors are now being made in commercial quantities from FD&C Blue 1, Yellow 5 and 6, and Red 2. Allied expects to offer commercial quantities from FD&C Blue 2, Red 3, and Violet 1 plating colors in the near future.

More information on the new FD&C plating colors and samples can be obtained by writing Allied Chemical Corporation, Industrial Chemicals Division, P. O. Box 353, Morristown, N. J. 07960.

**FRENCH SLIDE LECTURES
ON COLOR AND ILLUSIONS**

Two series of 24 slides with explanatory notes have been published in France by Diapofilm-1, rue Villaret-de-Joyeuse, Paris, 17^eème.

The first series was designed for teaching color, and comprises 24 slides illustrating: iridescence, the rainbow, portrait of Newton, experiments of Newton, additive and subtractive syntheses (diagrams and examples), color circle, color triangle, examples of albums or arrangements, and some sample experiments.

The second series is concerned with optical illusions and imagery impossible with classical illusions, perspective and false perspective, contrast, McKay's rays, subjective effects of color and form, relief and false relief, Fraser's spiral, Gregory's trident, and Penrose's perpetual staircase.

Very carefully worked out on an educational and pedagogic plan, these sets were prepared by M. Dérivé under the patronage of the Centre d'Information de la Couleur. They should prove to be of interest to lecturers, professors of design, architects, decorators, and others who are concerned with the problems of form and color.

Other series are in preparation, the next one dealing with polarized light.

**NECROLOGY
YASUO INAMURA**

During the annual meeting of the Council, we learned from Professor Omoto of the sudden death of Dr. Yasuo Inamura, Professor of the Inorganic Chemistry Department of the Tokyo Institute of Technology, director of the Japan Color Research Institute since its inception in 1953, and an individual ISCC member for many years.

Dr. Inamura, a native of Tokyo, was graduated in 1933 from the Dye Chemistry Department of the Tokyo Institute of Technology and in 1949 received his Doctor of Science degree in inorganic chemistry. From 1957 to date he was Professor of its Inorganic Chemistry Department. He died suddenly March 24, 1967, at the age of 58.

According to Mr. Hidemitsu Seki, permanent director of the Japan Color Research Institute, all the credit for bringing about the post-war color age in Japan should go to Dr. Inamura. He was active in many aspects of color, including colorimetry, color planning of buildings, and color styling of products. He was also an officer of the Japan Uniform Center, the Fashion Council of Japan Men's Fashion Union, the Color Material Association, and various organizations relative to the Tokyo Institute of Technology.

He was the author of many books on color such as "The Theory of Colors," "Color Adjustment," "Guide to Colors," and "Color-A B C." He translated the text of the third edition Color Harmony Manual and prepared tables of the colorimetric data for the chips to accompany the text, data which has received only limited distribution in this country.

Dr. Inamura was fluent in both English and French and these abilities along with his great personal charm were appreciated by all color workers who were privileged to know him. The time he took to receive foreign visitors helped enormously in making such visits fruitful ones. His death, coming at the height of his career, is regretted by all his friends and colleagues.

Walter C. Granville

DR. MURRAY'S PAPERS
AVAILABLE TO RESEARCHERS

In response to the article about Dr. Elsie Murray in the March-April issue, Mrs. Abby Levine, Manuscripts Cataloger at Cornell,

very thoughtfully provided the following information to Dorothy Nickerson.

"Your readers might be interested to know that Dr. Murray donated her papers to Cornell's Collection of Regional History and University Archives. These papers include correspondence with many prominent psychologists, and also test forms and materials, research and testing notes, drafts of her scientific writings, and printed and mimeographed material concerning color blindness and various aspects of color vision, the aesthetics of color, and color perception tests and apparatus. In addition, there are her notes as student and professor, and considerable material reflecting her lifelong interest in French Azilum, music, and other scientific and non-scientific topics.

"Researchers interested in Dr. Murray's career are welcome to consult these papers."

COLOR COMES TO THE
SIDEWALKS OF NEW YORK

According to an article in the Daily News of July 18, 1967, Howard Ketcham has been appointed as a consultant by the Highways Commissioner to encourage people to get rid of gray sidewalks. Among the possibilities being considered are: distinctive tints to aid in recognition of bus stops; variations of gold to signify exclusive shopping areas; green to designate marketing sections; and warm, lively colors in the entertainment sectors.

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In a Times article of August 9, 1967, it was reported that work was already underway in replacing gray center malls between Mount Eden Avenue and 182nd Street in the Bronx with a mixture of green, yellow, and red pavement, trimmed with white curbing. (Your editor does not know whether or not these changes are a result of Mr. Ketcham's recommendations.)

MISCELLANY

Blue autos most popular.

As reported by the Associated Press, a study by the duPont Company of preferred auto colors shows that white is no longer the favorite of new car buyers. White was said to be the favorite for ten years but was selected for only 12.5 percent of last year's cars, while medium blue was preferred for 18.2 percent. Black is reported to be steadily dropping in popularity: down from 13 percent in 1958 to 4 percent in 1966.

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Color to be used against germs.

In a recent article in the Cincinnati Enquirer, Science Writer David Bracey described how color-coding is to be used as an aid in keeping areas germ-free in the new Shrine Burns Institute in Cincinnati. Since wounds caused by burns are prone to infection and since infection can be spread by personnel taking care of patients, color will be used to help reduce this danger. The patient-care area will have a blue decor, and all staffers in that area will wear blue uniforms. Similarly, the "clean" operating room and its personnel will be coded in green, while the "septic" operating room and its staff will be in red. No one will be permitted to enter an area unless he is wearing a uniform of the appropriate color. Those who move from area to area will have to change uniforms and will thus leave behind a lot of bacteria.

REPRINTS ENCLOSED
WITH THIS ISSUE

A paper from the Williamsburg conference: "PPG Instrumental Color Control (ICC): Production Methods and Experiences" by Ruth M. Johnston and Thomas D. Richards. J. Paint Technology, June 1967, Vol. 39, No. 509, 377-384.

"The Meanings of Color" by Benjamin Wright and Lee Rainwater. J. Gen. Psychol., 1962, 67, 89-99.

"Fundamentals and Problems of Color: II. Analytical Aspects of Color" (Five papers presented at the 43rd Annual Meeting of the Federation of Societies for Paint Technology, Atlantic City, N. J., Oct. 30, 1965.) J. Paint Technology, June 1967, Vol. 39, No. 509, 341-376.

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"The Accuracy of Tristimulus Colorimeters When Measuring Metameric Pairs of Dyeings" by A. Berger and A. Brockes. Color Engineering, Vol. 5, No. 3, 34-39, May-June 1967.

"Adaptive Color Shifts" by H. Scheibner. J. Opt. Soc. Amer., 56, 1966, 938.

"Adding Color to X-Ray Radiographs" by Harvey R. Prins, J. Lawrence Katz, and Fred W. Billmeyer, Jr. Color Engineering, Vol. 5, No. 1, Jan.-Feb. 1967, pp. 25-27, 43.

"Analytical Color Matching" by Eugene Allen. J. Paint Tech., Vol. 39, No. 509, 368-376, June 1967.

"Aperçu sur les effets psychosomatiques d'un éclairage mixte naturel et artificiel" by M. Escher-Desrivieres. Couleurs, No. 60, 1965, 37-42.

"Application of Color Measurement and Control in the Fiber Industry" by V. Mischutin. American Dyestuff Reporter, March 28, 1966, 55, No. 7, pp. 52-57.

"Application of Light Scattering Theory to Hiding Power of Titanium" by Dr. Harold Clark. American Ink Maker, Oct. 1966, pp. 94-96, 132, 133.

"Approaching Color Control" by William C. Jeff. Industrial Design, April 1967, pp. 41-45.

"Bezold-Brucke Hue Shift Measured by Color-naming Technique" by R. M. Boynton and J. Gordon. J. Opt. Soc. Amer., 1965, 55, No. 1, 78-86.

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"CBS Experience with Plumbicon Color Cameras" by Richard G. Streeter and Robert L. Cobler. J. SMPTE, Vol. 75, August 1966, p. 749.

"A Classification of Pigment Colors" by W. Spencer. Am. Paint J., May 23, 1966, 50, No. 48, pp. 76-79, 82-83.

"Color and Appearance" by Ruth M. Johnson and Robert E. Park. Color Engrng., Nov.-Dec. 1966, 4, No. 6, 14-19.

"Color and Productivity in the Motor Car Industry" by Leslie Hubble. Prod. Finish., Oct. 1966, 19, No. 10, 61-67.

"Color-Appearance Measurement" Part 1: "A Colorimeter for Haploscopic Color Matching" by C. J. Bartleson, Photo. Sci. & Eng., March-Apr. 1966, 10, No. 2, pp. 104-110; Part 2: "A Haploscopic Brightness Meter" by E. J. Breneman, Photo Sci. & Eng., May-June 1966, 10, No. 3, pp. 144-149.

"The Color Around Us" by W. Stump. American Dyestuff Reporter, March 28, 1966, 55, No. 7, pp. 40-43.

"Color Difference Acceptability Versus Conditions of Viewing." Philadelphia Society, J. Paint Tech., Nov. 1966, 38, No. 502, 695-701.

"Color Instrumentation for the Practical Dyer" by R. Stanziola. American Dyestuff Reporter, March 28, 1966, 55, No. 7, pp. 44-51.

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